

### **3.5.4 Public Research and Education**

The Michigan Department of Natural Resources budgets approximately \$8 million per year to support a wide variety of on-going forestry, wildlife and fisheries research projects that are designed to increase knowledge and to improve methods of sustainable management of Michigan's public lands. Many of these research projects are accomplished in cooperation with State Universities through formal agreements (Partnership for Ecosystem Research and Management (PERM)) and on an as needed call for proposals for subjects of interest. The DNR produces an annual report to document the commitment to sustainable forestry research and to inform discussion on research needs and collaboration opportunities among the DNR Divisions.

Products of research projects often include educational materials that serve to convey research findings to the public. Since almost 63% of timberland in the state is in private ownership (Figure 2.4), public education programs are a critical part of encouraging sustainable natural resource management throughout the state.

## **4 - STATEWIDE MANAGEMENT DIRECTION**

### **4.1 – Desired Future Conditions, Goals, Objectives, Standards and Guidelines**

This section contains specific statements of the desired future condition of the State Forest, and the goals and objectives through which the DNR's long-term management objectives (as outlined in Section 1) can be achieved. The Department has a vision of the desired future conditions of DNR-managed forest lands, which is predicated upon a sustainable, ecosystem-based management philosophy. When achieved, the desired future conditions will:

1. Sustain fundamental ecological processes and functions that, in turn, support representative, diverse, and productive biological assemblages that provide a wide array of resource outputs.
2. Provide for a variety of ecosystem services that help sustain human civilization. Examples include purification of air and water, carbon storage, and moderation of drought and flood conditions.
3. Provide for a variety of sustainable human values that are derived from ecosystems; including economic, recreational, and intrinsic values.
4. Provide for a variety of forest-based products.

Standards and guidelines are included as tools for DNR staff to use in the achievement of these goals through the operational management of the State Forest. Where standards originate from higher authority, they retain higher precedence than the contents of this plan. Monitoring criteria are provided as a tool for assessing progress toward the achievement of goals, objectives and desired future conditions.

As previously discussed at the beginning of Section 3, there are many competing demands for human use of the State's forest resources, and provision of one use is always constrained by demands for other competing uses for the same resource. The desired future conditions, goals and objectives that are laid out in the following sections for the many

uses of forest resource base are thus framed in terms of competing uses, where a particular use is adapted to become compatible with other uses. The content of this section should also be viewed within the context that budgetary and manpower resources may have an impact upon the ability of the DNR to work toward the achievement of goals and objectives within desired timeframes.

#### **4.1.1 - Recreation Management**

##### **4.1.1.1 – Boating and Fishing Access Sites and Marinas/Harbors**

###### **Desired Future Condition:**

The State Forest system provides a variety of Great Lakes, inland lake and river access sites for various types and sizes of watercraft within the context of other ecological and socio-economic values.

###### **Goals:**

1. Existing Great Lakes, inland lake and river access sites on State Forest lands will be maintained for public use.
2. New access sites will be developed in key areas of the State Forest.

###### **Objectives:**

1. Evaluate and renovate existing water access facilities to meet the current ADA standards for handicap access.
2. Close river and stream access sites where unauthorized public use is causing harm to aquatic or terrestrial resources.
3. Evaluate the system for demand, uses and resource protection and where necessary to develop, renovate or close public access sites.
4. Determine key access locations for future acquisition or development.

###### **Standards:**

1. DNR Natural Resource Commission Policy and Procedure 30.32-01, Rights-of-Way to Water Frontage, issued July 11, 2005.
2. DNR Natural Resource Commission Policy and Procedure 30.32-02, Fishing Sites – Development and Maintenance of, issued July 11, 2005.
3. Forest, Mineral and Fire Management Division Policy and Procedure 251, Sale and Removal of Timber, issued March 1, 2000.
4. DNR Forest Certification Work Instruction 1.5 – Social Impact Considerations and Public Involvement Processes
5. DNR Forest Certification Work Instruction 3.2 – Best Management Practices Non-Conformance Reporting Instructions
6. DNR Forest Certification Work Instruction 6.2 – Integrating Public Recreational Opportunities with Management on State Forest Lands
7. Design Handbook for Recreational Boating and Fishing Facilities (States Organization for Boating Access 1996)
8. Parks and Recreation Division Boating Access Site Design Guides (Michigan Department of Natural Resources 2003a).

9. Parks and Recreation Division Harbor Development Standards Guidance (Michigan Department of Natural Resources 2003b).

**Monitoring Criteria:**

Statewide Criterion 4 - Recreation, Indicators 4.1, 4.5

**4.1.1.2 – Recreational Trails**

**Desired Future Condition:**

The State Forest system provides a variety of motorized (ORV and snowmobile) and non-motorized (mountain bike, horse, skiing and hiking) recreation trails in a variety of settings, within the context of other ecological and socio-economic values. Non-motorized trails will include a variety of looped and linear trails that are connected with recreation resources such as campground trailheads, and will range in accessibility from wheel chair accessible to primitive hiking trails.

**Goals:**

1. The existing trail system will be maintained, upgraded and further developed for continued use in a manner that meets program objectives, maintenance standards, provides safe access and use, connects with existing recreational resources and goods and service providers, promotes multiple use and minimizes resource damage and user conflicts.
2. Trails will be located in a variety of landscape settings.
3. All trails will be managed for multiple uses, while restricting specific uses on designated trails in order to minimize resource damage or for user safety.

**Objectives:**

1. Conduct an assessment of trail use and users to determine concerns, data regarding the economic impacts of use, and suggestions to improve Michigan's trail program.
2. Conduct trail and trailhead maintenance to DNR standards through DNR staff and through trail grant sponsors, volunteers and partners.
3. Enhance program effectiveness and efficiency.
4. Where ecologically expedient, expand and secure the system of land and water trails to promote recreational, economic, transportation and health benefits through the use of partnerships, acquisition, easements or long-term leases.
5. Targeted expansion to link existing trails and form a cohesive network that includes effective use of existing forest roads and transportation corridors for compatible non-motorized and motorized recreation links.
6. Cooperate and partner with existing and new non-profit organizations (e.g. snowmobile and ORV organizations), other public land managers (U.S. Forest Service and National Park Service), and road management

- agencies (MDOT and county road commissions) in the cooperative maintenance and development of trail systems.
7. Evaluate and renovate existing trail facilities and construct and manage new trails and trailheads to meet demand, use, resource protection and universal access standards and guidelines.
  8. Have no net loss of trail length.
  9. Prepare and conduct timber harvest prescriptions in a manner that attempts to maintain aesthetic values along trails.
  10. Close to public access and restore unauthorized access trails that cause harm to terrestrial and aquatic resources.
  11. Enable and execute a concerted monitoring effort to identify, document and restore ORV damage to DNR-owned lands.

**Standards:**

1. Part 711, Recreation Improvement Fund, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
2. Part 721, Trailways System, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
3. Part 811, ORV Trail System, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
4. Part 821, Snowmobile Trail System, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
5. Part 831, Integrated Forest Recreation System, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
6. Forest, Mineral and Fire Management Division Policy and Procedure 251, Sale and Removal of Timber, issued March 1, 2000.
7. 2003-2007 Michigan Comprehensive Outdoor Recreation Plan.
8. Maintenance standards for ORV trails and routes are in accordance with IC1850 "Recreational and Snowmobile Trail Grant Handbook", IC1990 "ORV Trail Improvement Fund Procedures Manual", IC 1991 "DNRORV Trail and Route Maintenance Handbook" and IC 3600 "ORV Trail Maintenance Grant Application Information".
9. DNR Natural Resource Commission Policy and Procedure 37.25-04, Recreation-Trails, Off-Road Vehicles, and Snowmobile Affairs, issued July 11, 2005.
10. DNR Forest Certification Work Instruction 6.2 – Integrating Public Recreational Opportunities with Management on State Forest Lands
11. DNR Forest Certification Work Instruction 3.2 – Best Management Practices Non-Conformance Reporting Instructions.

**Guidelines:**

1. Consider interpretive signs, trails and other similar educational tools in forest management plans.
2. Explore cooperative projects with local conservation organizations.
3. Monitoring of the condition of the designated ORV system using random annual audits.

**Monitoring Criteria:**

Statewide Criterion 4 - Recreation, Indicators 4.2, 4.3

**4.1.1.3 – State Forest Campgrounds****Desired Future Condition:**

The State Forest system provides designated and dispersed camping opportunities, located in a variety of settings, within the context of other ecological and socio-economic values.

**Goals:**

1. State Forest Campgrounds will be continually evaluated for adequate accommodation based on demand, use and resource protection needs. The existing system will be maintained and improved for continued public use.
2. Continually evaluate and upgrade existing campground facilities to meet the current ADA standards for handicap access.
3. State Forest lands will be available for dispersed camping, except for within one mile of a State Forest campground or if in conflict with other management goals and objectives.

**Standards:**

1. Part 742, Camp Registration Cards, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
2. Part 831, State Forest Recreation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
3. Forest, Mineral and Fire Management Division Policy and Procedure 251, Sale and Removal of Timber, issued March 1, 2000.
4. 2003-2007 Michigan Comprehensive Outdoor Recreation Plan.
5. DNR Forest Certification Work Instruction 6.2 – Integrating Public Recreational Opportunities with Management on State Forest Lands

**Monitoring Criteria:**

Statewide Criterion 4 - Recreation, Indicator 4.4

**4.1.1.4 – Hunting, Trapping, Fishing and Other Dispersed Recreation****Desired Future Condition:**

The State Forest system provides diverse opportunities for hunting, trapping, fishing, and other dispersed recreational opportunities (such as wildlife photography, birding, picking of wild fruit, etc.) for the public, within the context of other ecological and socio-economic values.

**Goals:**

1. Provide suitable dispersed areas to meet public desire for hunting and trapping activities for various game species.
2. Use hunting and trapping as game species population management tools.
3. Provide diverse public fishing opportunities, promote the value of recreational fishing, and contribute to public stewardship and understanding of natural resources.
4. Encourage fish habitat improvement projects at or near public access sites to improve fish populations and fishing opportunity.
5. Stock healthy fish as called for by fish management prescriptions.
6. Provide suitable areas to meet public desire for general dispersed recreational activities such as bird watching, berry and mushroom picking, and other similar activities.
7. Provide both road and road-less area access to areas that support dispersed recreational activities.

**Objectives:**

1. Provide universal access opportunities for dispersed recreation.
2. Maintain habitat necessary to support wildlife populations that provide opportunities for dispersed recreation.
3. Determining the kinds of angling provided by each inland lake, stream, and Great Lakes port and direct Fisheries Division activities in each watershed management unit to provide for fishing opportunity.
4. Develop fishing regulations that best distribute angling benefits among anglers and balance fishing quality with fishing intensity.
5. Develop and maintain fish hatchery and rearing pond capacities which can reliably and efficiently produce fish at low cost and in the varieties, sizes, and numbers called for in fish stocking targets.
6. Maintain genetically diverse wild or captive broodstocks for the species and strains of fish needed for fishery management.
7. Produce and stock fish that are free of debilitating and lethal diseases, of good quality, and do not show symptoms of chronic stress.
8. Tag or mark a portion of fish produced to permit evaluation of fish performance and their contribution to fisheries of the Great Lakes region.
9. Stock or transfer fish according to fishery management plans and priorities in the manner and times which will produce optimal results at the lowest possible cost.
10. Develop informative materials (web or print based) related to fishing regulations, fishing access sites, fishery attributes, fish stocking locations.

**Standards:**

1. DNR Natural Resource Commission Policy and Procedure 30.32-02, Fishing Sites – Development and Maintenance of, issued July 11, 2005.
2. DNR Forest Certification Work Instruction 1.5 – Social Impact Considerations and Public Involvement Processes.

3. DNR Forest Certification Work Instruction 6.2 – Integrating Public Recreational Opportunities with Management on State Forest Lands.
4. Fisheries Division policies and procedures related to fish stocking, hatchery production, research and evaluation.

**Guidelines:**

1. Impacts on dispersed recreational activities should be considered in all management decisions.

**Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicators 1.2, 1.3  
 Statewide Criterion 2 – Water Quality, Indicators 2.1, 2.5  
 Statewide Criterion 3 – Social/Cultural/Spiritual, Indicators 3.1, 3.3  
 Statewide Criterion 4 – Recreation, Indicators 4.1, 4.3, 4.4, 4.5, 4.7  
 Statewide Criterion 5 – Ownership patterns, Indicator 5.2

**4.1.1.5 – Areas Managed for Hunting**

**Desired Future Condition:**

The State Forest provides areas that are managed for hunting (such as floodings and grasslands) for the public, while also taking into consideration other ecological and socio-economic values.

**Goals:**

1. Provide areas to address the public desire for hunting activities that require specialized management for the maintenance of suitable habitat.

**Objectives:**

1. Classify all areas managed primarily for hunting as special conservation areas, where hunting is the over-riding resource management value.
2. Identify properties purchased with Federal funds and to administer these areas in full compliance with Federal requirements.
3. Use native vegetation plantings in the creation, maintenance or restoration of managed areas.

**Standards:**

1. Part 413, Transgenic and Non-Native Organisms, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
2. DNR Forest Certification Work Instruction 1.4 – Biodiversity Management on State Forest Lands
3. DNR Forest Certification Work Instruction 2.2 – Use of Pesticides and Other Chemicals on State Forest Lands

4. DNR Forest Certification Work Instruction 6.2 – Integrating Public Recreational Opportunities with Management on State Forest Lands

**Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicators 1.2, 1.3  
Statewide Criterion 4 – Recreation, Indicator 4.1

**Guidelines:**

1. Design new waterfowl floodings as landscape features, with minimal maintenance or operational requirements.
2. Discourage the construction of waterfowl floodings through the damming of streams.
3. Encourage wetland restoration projects for the construction of new waterfowl floodings. The damming or diking of artificial drains in conjunction with small pushouts is the preferred method of construction.

**4.1.1.6 - Visual Management**

**Desired Future Condition:**

Manage the visual and aesthetic character of the State Forest to present diverse scenic attributes while taking into consideration other ecological and socio-economic values.

**Goals:**

1. Where possible in the management of the working forest, maintain or enhance the general natural aesthetic character of the State Forest, particularly in those areas associated with developed recreational facilities.
2. Evaluate and renovate existing overlook facilities to meet universal access standards and guidelines.
3. Maintain or enhance exceptional scenic vistas on roadsides, overlooks, waterfronts, and other special areas, and in the course of compartment review to appropriately code them as Special Conservation Areas.

**Objectives:**

1. Seek to establish, maintain or enhance vegetated buffer zones around campgrounds, access sites, and trails systems.
2. Increase use of techniques such as shelterwood, seed-tree, single-tree and group-tree selection methods, the employment of irregular timber sale boundaries, and retention of screens along roads to reduce to adverse impacts of timber harvest upon visual and aesthetic quality values.
3. Consider the impact of proposed management prescriptions upon exceptional scenic vistas.



**Standards:**

1. DNR Forest Certification Work Instruction 6.2 – Integrating Public Recreational Opportunities with Management on State Forest Lands

**Monitoring Criteria:**

Statewide Criterion 3 – Social/Cultural/Spiritual, Indicators 3.2, 3.3

Statewide Criterion 4 – Recreation, Indicator 4.3

Statewide Criterion 5 – Recreation, Indicator 5.3

**Guidelines:**

1. Give aesthetic considerations to harvesting patterns, road placement, and landing designs where visual aesthetics are a concern (i.e. for scenic areas or vistas).

**4.1.2 - Vegetation Management****4.1.2.1 - Biodiversity****Desired Future Condition:**

The State Forest System conserves, restores and protects native biodiversity by managing for diverse composition and structure in both forested and non-forested natural communities upon suitably adapted sites. Forested communities are healthy and sustainable, with natural ecological processes that are resilient to natural and human disturbances, supportive of a wide variety of terrestrial and aquatic wildlife species, and free of non-native invasive plant and animal species, while providing for other ecological and socio-economic values.

**Goals:**

1. Manage the State Forest to encourage the maintenance of intact and functional landscapes, ecosystems, and communities that, within the context of the ecological potential on these scales, will provide healthy and sustainable habitat for the broad range of Michigan's native plant and animal species.
2. Maintain a variety of successional states, diverse species composition, and balanced age and size class structure to enhance biological diversity.
3. Use community and species site suitability as a guiding principle for vegetation management.
4. Maintain, enhance and restore within-stand structural and compositional diversity, consistent with the suitability of the site.
5. Seek to maintain, enhance and restore habitat connectivity in forested landscapes, consistent with the inherent landscape potential.
6. Maintain, enhance and restore functioning landscape mosaics to provide wildlife habitat.

7. Where possible and prudent, seek to prevent the establishment of invasive plant and animal species, and to strive for eradication of invasive populations where feasible.

**Objectives:**

1. Identify the general distribution, quality, condition and functionality for each of the 75 Michigan Natural Features Inventory (MNFI) natural community types known to the State (Appendix I).
2. Assess the quality, condition and functionality of natural communities, their ecological processes and their potential for preservation into the next century, and to define conservation objectives and ecological criteria for each natural community type.
3. Identify social and economic trends and constraints to conserving biodiversity at the landscape level.
4. As budgetary resources are available, employ the MNFI to survey all State Forest lands to determine the location, quality and condition of natural community types.
5. Use the Kotar Habitat Type Classification System (Burger and Kotar 2003) to make informed decisions on the site suitability of upland vegetation. Where the Kotar system is not currently available, soils and other information will be used.
6. Increase structural and compositional diversity of native species of shrubs and trees within the associated landscape communities where they are naturally expected to be present, by emphasizing the retention of under-represented species in harvest areas.
7. Give special emphasis to the restoration of the mesic conifer component within mixed mesic conifer-deciduous communities.
8. Give special emphasis to the expansion and restoration of savanna communities (such as dry sand prairies, pine barrens, oak-pine barrens and Great Lakes barrens) within ecoregional landscapes.
9. Seek to achieve and maintain balanced age class distributions for even-aged managed cover types.
10. Seek to achieve and maintain adequate regeneration for uneven-aged cover types.
11. Maintain habitat corridors for wildlife species that are dependent upon habitat connectivity across a mosaic of cover types, or through contiguous cover by limiting fragmentation of forested landscapes.
12. Coordinate with other ownerships within regional landscapes on the conservation of High Conservation Value Areas.

**Standards:**

1. Part 413, Transgenic and Non-Native Organisms, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
2. DNR Forest Certification Work Instruction 1.4 – Biodiversity Management on State Forest Lands.

**Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicators 1.1, 1.2, 1.3, 1.4

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicator 2.4

**Guidelines:**

1. Use DNR Conservation Area Management Guidelines (Michigan Department of Natural Resources, 2005b).
2. Promote the regeneration and maintenance of a variety of vegetative habitats that support a wide assemblage of plant and animal communities throughout the forested landscape.
3. Provide old field grassland habitat for various grassland-dependent species and species of greatest conservation need and consider maintaining open conditions in landscapes where open lands are lacking.
4. Use Guidelines for Red Pine Management (Michigan Department of Natural Resources 2006a) in incorporating biodiversity needs into plantation management plans.
5. In forested ecosystems, apply DNR Within-Stand Retention Guidelines (Michigan Department of Natural Resources 2006b) to all silvicultural prescriptions to maintain or foster spatial and temporal diversity and complexity of stand structure.
6. Use the “Process for Implementing Mesic Conifer Restoration on State Land” (Michigan Department of Natural Resources 2004a) when seeking to diversify species composition of deciduous forest cover types.
7. Strive to preserve viable pools of wild genetic stock, and to utilize a variety of genetically diverse and regionally adapted seed stock for reforestation and afforestation purposes.
8. Strive to ensure that ecological functions and values are maintained intact, enhanced or restored at the forest and stand level. Ecological functions include forest regeneration and succession, and natural carbon, nutrient, and hydrologic cycles that affect the productivity of both forest and aquatic ecosystems. Ecological values include large mature and declining trees, shade trees for aquatic systems, snags for den and nest trees, den logs, terrestrial coarse dead wood, tip-up mounds and nurse logs, aquatic large woody debris, soil organic matter, and minimal sediment input and adequate organic energy input into aquatic systems.

**4.1.2.2 – Forest Resources****Desired Future Condition:**

The DNR works cooperatively with the forest products industry, other stakeholders, and other public agencies to manage a stable forest land base and to offer a diverse assemblage of community types, tree species, successional stages, age classes and forest products, while also providing for

the conservation of biological diversity, forest health and other ecological and socio-economic values.

**Goals:**

1. Maintain up-to-date, comprehensive information on forest inventories and engage in efforts to keep abreast of market conditions at the local, state, national and international levels.
2. Actively manage the State Forest for stable, long-term, sustainable timber production.
3. Cooperate with the Michigan Department of Labor and Economic Growth and the Michigan Economic Development Council to promote and encourage forest products companies in Michigan, and attract new forest product companies to locate in the state.
4. Promote logger and other industry education programs, including education for new sustainable forestry practices.
5. For the purposes of providing a stable supply of fiber and diverse forest conditions, strive to achieve balanced age and size class distributions of commercial forest cover types across ecoregional landscapes (taking into account ERAs, HCVAs and in some cases SCAs).
6. Generally manage early-successional cover types (comprised of shade intolerant aspen, paper birch, jack and red pine, and black oak) as even-aged stands with balanced age class distributions across the landscape, consistent with the suitability of the site.
7. Generally manage mid-successional cover types (comprised of intermediate shade tolerant white pine, yellow birch, white and red oak and black spruce) as all-aged stands with all-aged class distributions across the landscape, consistent with the suitability of the site.
8. Generally manage late-successional cover types (comprised of shade tolerant sugar maple, beech, hemlock, balsam fir, white cedar, and white spruce) as all-aged stands with all-aged class distributions across the landscape, consistent with the suitability of the site.
9. Through silvicultural practices and applied prescriptions encourage regeneration that moves the forest toward the desired future condition.
10. Use site suitability of species as a guiding principle for forest vegetation management.
11. Consider the rates of growth and management objectives for pulpwood vs. sawlog production in the application of rotation lengths.
12. Provide ecosystem services (such as carbon sequestration, purification of air and water, and provision of habitat).

**Objectives:**

1. Projections and sustainability of harvests are based upon inventory growth and regeneration data, site index models, and desired future conditions, while also dependent upon changing market and resource product demands.
2. Use the Kotar Habitat Type Classification System (Burger and Kotar 2003) to make informed decisions on the site suitability of upland forest vegetation. Where the Kotar system is not currently available, soils and other information will be used.

3. Work toward balancing the age class distribution of the aspen cover type by increasing prescriptions in the 30-39 and 40-49 year age classes over the next decade.
4. Manage the northern hardwood cover type as all-aged stands, while balancing economic productivity and biodiversity demands.
5. Where adequate seed trees are present, encourage the natural regeneration of hemlock within northern hardwood communities and to encourage the restoration and expansion of mixed hemlock/white pine and mixed hemlock/yellow birch communities within regional landscapes, through the employment of nurse logs and soil scarification. Where inadequate seed trees remain in areas where hemlock was historically present and where browse pressure is within limits favorable for successful recruitment, to under-plant hemlock in mesic northern hardwood and white pine communities.
6. Reduce the stock of over-mature jack pine in the 70-79 and 80-89 year ages classes and to reduce the acreage of harvests in the jack pine cover type to within the area regulation decade sum of approximately 40,000 acres, while operating within the framework of the Kirtland's Warbler Management Plan.
7. Balance the age class distribution of the red pine cover type at approximately 25,000 to 30,000 acres per class, by increasing regeneration harvests to over 2,000 acres per year over the next decade.
8. Work toward retaining the species and balancing the age class distribution of the oak cover type by increasing the number of regeneration cuts in the 70-79 and 80-89 year age classes.
9. Retain white pine or other mixed deciduous components in mixed oak stands.
10. Encourage the natural regeneration of the paper birch cover type where adequate seed trees are present, through the employment of patch clearcuts followed by prescribed fire for suitable seedbed preparation.
11. Balance the age class distributions of lowland hardwood and balsam poplar cover types, by increasing harvests within the 60-69, 70-79 and 80-89 year age classes for balsam poplar and the 70-79 and 80-89 year age classes of even-aged lowland hardwood stands.
12. Encourage the retention and regeneration of hemlock and yellow birch within the lowland hardwood cover types through the employment of nurse logs and soil scarification. This will be done within the context of other DNR objectives including beaver management policy and the maintenance of habitat connectivity in riparian management zones.
13. Work toward greater balance in the age class distribution of the spruce-fir cover type, through increased harvests within the 70-79 and 80-89 year age classes.
14. Encourage the retention, restoration and expansion of spruce and fir within other cover types based upon site suitability, landscape and wildlife habitat considerations.
15. Work toward recruiting younger age classes of the northern white cedar cover type by encouraging regeneration through the judicious use of prescribed fire, vegetative reproduction (layering) and other experimental methods.

16. Encourage regeneration and the recruitment of younger age classes for the tamarack cover type.
17. Balance the age class distribution of the black spruce cover type by increasing harvests in the 70-79 and 80-89 year age classes, within the context of other DNR objectives including the provision of winter wildlife habitat.
18. Work toward recruiting younger age classes of the black spruce cover type by encouraging regeneration through the judicious use of prescribed fire and vegetative reproduction (layering).
19. Balance the age class distribution of the mixed swamp conifer cover type by increasing harvests in the 70-79, 80-89, 90-99 and 100+ year age classes, within the context of other DNR objectives including the provision of winter wildlife habitat.
20. Work toward recruiting younger age classes of the mixed swamp conifer cover type by encouraging regeneration through the judicious use of prescribed fire and vegetative reproduction (layering).
21. Increase regeneration harvests of the white pine cover type as stands reach the 100+ year rotational age class over the next decade.
22. Allow the natural regeneration and recruitment of white pine within mixed oak, red pine, aspen and to a lesser extent jack pine stands. Where inadequate seed trees are present, to under-plant white pine in mesic northern hardwood and post-thinned red pine stands.
23. Once desired conditions of species composition and age-class structure have been achieved, demonstrate through harvest and growth records that the volume harvested during any 10-year span does not exceed the net growth accumulated over that same period.
24. Carry out biennial surveys of forest products firms to facilitate the compilation of USDA Forest Service timber product output (TPO) reports.
25. Meet with representatives of forest resource stakeholder groups and participate in associations of mutual interest (e.g. the USDA Forest Service, the Great Lakes Forestry Alliance and the Forest Management Advisory Council).
26. Participate in wood product utilization and marketing programs and meetings.
27. Maintain a wood products manufacturers' directory.
28. Endeavor to advance sound forestry practices on private, non-industrial lands through collaboration with and support for assistance programs for such lands.
29. Participate in the Sustainable Forestry Initiative's (SFI) Statewide Implementation Committee.
30. Collaborate with other major land owners in landscape-level plans when such opportunities arise.
31. Evaluate local and regional economic impacts of DNR timber sales as part of DNR inventory and timber sale decision making processes.
32. Identify the nature and size of impacts from conflicts over forest uses and values and possible resolutions to minimize these conflicts.
33. Maintain and communicate realistic appraisals of timber inventories and harvest trends.
34. Communicate the social, economic, and ecological benefits of a working forest as part of its sustainable forestry management.

35. Encourage the development of uses for salvaged ash trees by industry.

**Standards:**

1. DNR Natural Resources Commission Policy and Procedure 32.22-06, Forest Type Mapping Instructions and Type Symbols, issued July 11, 2005.
2. DNR Natural Resources Commission Policy and Procedure 32.22-07, Forest Management, issued July 11, 2005.
3. Part 511, Commercial Forests, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and the administrative rules thereof.
4. DNR Forest Certification Work Instruction 1.5 – Social Impact Considerations and Public Involvement Processes.
5. DNR Forest Certification Work Instruction 1.6 – Forest Management Unit Analysis.
6. DNR Forest Certification Work Instruction 1.7 – State Forest Timber Harvest Trends.
7. DNR Forest Certification Work Instruction 2.1 – Reforestation.

**Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicators 2.1, 2.2, 2.6

Statewide Criterion 3 – Social/Cultural/Spiritual, Indicator 3.2

Statewide Criterion 5 – Ownership Patterns, Indicators 5.1, 5.3

Statewide Criterion 6 – Economic Health, Indicators 6.1, 6.2, 6.3

Statewide Criterion 7 – Institutional Processes, Indicator 7.1

**Guidelines:**

1. Include in the compartment review process an assessment of social, biological and economic conditions to include:
  - Common vegetation cover types, animals and their habitats
  - Unique, vulnerable, rare and threatened plant communities
  - Sensitive, threatened and endangered species and their habitats
  - Water and fishery resources
  - Soil resources
  - Natural disturbance regimes
  - Habitat connectivity and Landscape-level Mosaics
  - Potential successional pathways, as identified using the Kotar Habitat Type Classification System (Burger and Kotar 2003).
2. The current ecological conditions supported by these factors should be compared with both historical conditions and desired future conditions within a landscape context. The assessment should be used to develop management options and silvicultural practices that will achieve long-term desired future conditions for social and economic values and maintenance of the ecological functions and productivity of the forest.
3. Consider that landform, localized climate, soils, topographic aspect, growth-limiting nutrient factors, localized precipitation rates and forest

canopy cover can create micro-climates that possess different hydrologic properties and support different forest communities across the forest landscape. The Kotar Habitat Type Classification System should be used to assist in determining site suitability when considering which tree species are best adapted to specific sites and local hydrologic conditions.

4. Manage red pine stands in accordance with the direction provided by Guidelines for Red Pine Management (Michigan Department of Natural Resources 2006a).
5. Promote prompt reforestation and manage both early and late successional forests to provide carbon sequestration service to the biosphere.
6. The rate of harvest of forest products should not exceed levels that can be biologically sustained. The sustainability of harvest levels is based upon growth and regeneration data and rates of harvest and removals (less mortality), and limits are modified by desired future conditions of the forest.
7. The average size of clearcut harvests over the State Forest system should not exceed 120 acres. Regeneration in clearcut stands should be at least 3-years old, or 5-feet high at desired stocking levels before adjacent stands are clearcut. Harvests in response to disease infestations or natural disturbances, or for special management areas (such as Kirtland's Warbler habitat) are exceptions to these requirements.

#### **4.1.2.3 - Wildlife**

##### **Desired Future Condition:**

The State Forest provides a diversity of wildlife habitat necessary for meeting the needs of common, declining and rare wildlife species as part of sustainable ecosystems, while also taking into consideration the conservation of biodiversity and the provision of commercial and non-commercial forest and timber products, recreational opportunities and other socio-economic benefits.

##### **Goals:**

1. Use an ecosystem-based conservation approach to provide diverse age and size classes and successional states for the habitat needs of wildlife and to effectively conserve rare, declining and common species.
2. Provide healthy, sustainable populations of native wildlife species that support ecosystem functions and wildlife-based recreation.

##### **Objectives:**

1. Manage the State Forest in a fashion that maintains or enhances the quality of terrestrial habitat for Species of Greatest Conservation Need (see Wildlife Action Plan) within the long-term ecological potential of the landscape.
2. Strive to restore natural barren and savanna grassland systems as critical habitat for grassland dependent wildlife with the context of site suitability and other socio-economic values.



3. Manage the vegetation on State Forest to provide high quality habitats for game species to support hunting, trapping, and wildlife viewing within the long-term ecological potential of the landscape.
4. Manage the State Forest to minimize the loss of habitat for early successional species (e.g. deer and grouse) by minimizing the loss of the aspen cover type over the next 10 years, within the context of site suitability and other socio-economic values.
5. Manage the State Forest so that there is representation of early successional forested habitat in riparian zones for woodcock and other species, within the context of other DNR objectives including beaver management policy, the maintenance of habitat connectivity in riparian management zones, site suitability and social-economic values.
6. Manage the State Forest to maintain production of hard mast in the landscape to support healthy wildlife populations.
7. Manage the cedar and lowland conifer cover types and adjacent uplands on State Forest as habitat for deer and other wildlife species.
8. Preserve, enhance, or restore wildlife habitat features associated with dead wood, legacy trees, riparian areas, seasonal wetlands, caves, and rocks.
9. Manage habitat for cervids on the State Forest to provide adequate browse for healthy populations of these species without significantly impacting the biodiversity, regeneration, composition and long-term sustainability of forest vegetation.

**Standards:**

1. DNR Natural Resource Commission Policy and Procedure 32.22-07, Forest Management, issued July 11, 2005.
2. DNR Natural Resource Commission Policy and Procedure 39.21-08, Wildlife Flooding Projects – Operation and Maintenance, issued July 11, 2005.
3. DNR Natural Resource Commission Policy and Procedure 39.21-18, Wildlife - Procedure on Flooding Projects for Fish or Wildlife, issued July 11, 2005.
4. DNR Natural Resource Commission Policy and Procedure 39.21-20, Beaver Management, issued July 11, 2005.
5. DNR Forest Certification Work Instruction 1.4 – Biodiversity Management on State Forest Lands.
6. DNR Forest Certification Work Instruction 2.1 – Reforestation.
7. DNR Forest Certification Work Instruction 3.1 – Forest Operations

**Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicators 1.2, 1.3  
 Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicators 2.1, 2.4

**Guidelines:**

1. Use the DNR Wildlife Action Plan and Silvicultural Guidelines for developing management prescriptions for habitat of Species of Greatest Conservation Need.
2. Provide old field grassland habitat for various grassland-dependent species and species of greatest conservation need and consider maintaining open conditions in landscapes where open lands are lacking.
3. Manage multiple aspen age classes in close proximity to each other. Age classes should be balanced across ecological landscapes.
4. Commercial timber prescriptions should be the first option for manipulation of forest habitat, but non-commercial methods may be used on lands that have major wildlife values and needs.

**4.1.2.4 - Fisheries****Desired Future Condition:**

Each watershed will provide ecological functions and processes that are sustainable, similar to those exhibited by watersheds in an unaltered state; aquatic habitats will have sustainable attributes that are important for maintaining aquatic life, similar to those exhibited by aquatic habitats in an unaltered state; aquatic habitats will support healthy and self-sustaining communities of plants and animals, in-turn leading to stable and appropriate ecosystem functions; and healthy and self-sustaining communities of plants and animals will provide desirable socio-economic benefits and services to current and future generations.

**Goals:**

1. Protect and maintain aquatic communities and the habitats upon which they depend, resulting in healthy populations of plants and animals.
2. Rehabilitate degraded aquatic communities and the habitats upon which they depend, resulting in the re-establishment of healthy populations of plants and animals.

**Objectives:**

1. Conduct a comprehensive statewide survey of habitats, fishes, and selected other aquatic species using a statistically sound 'status and trends' design.
2. Conduct ecological assessments of major fish stocks, defining discreteness of stocks, distributions, habitat preferences, movement patterns, survival rates, age structure, growth rates, reproductive rates, diet patterns, and occurrence and distribution of diseases.
3. Develop and manage databases and software in support of resource inventory surveys and fish stockings in Michigan's waters that incorporate spatial information and technologies.
4. Develop, deploy, and manage ecological classifications for inland waters and the Great Lakes, based on geographic information systems,

- to serve as a framework for inventories, management decision models, and reporting.
5. Develop measures to prevent losses of aquatic resources resulting from developmental projects and seek mitigation for any unavoidable losses.
  6. Monitor occurrence and distribution of exotic species, evaluate their effects on aquatic communities, and cooperate in containment or control measures to avoid damages to aquatic resources.
  7. Work with the departments of Environmental Quality and Community Health to monitor and minimize contaminant loads in fish, to minimize potential risks to publics, and to communicate risks clearly to publics.
  8. Coordinate with the Michigan Department of Agriculture in regulating the aquaculture industry, and work to minimize impacts of accidental releases, spread of fish diseases, and importation of unwanted species.
  9. Provide technical support and guidance to citizens' groups and local governments for aquatic habitat and community protection and rehabilitation projects.
  10. Provide input to DEQ regulatory processes regarding permits and developments within aquatic habitats and riparian areas.

**Standards:**

1. DNR Natural Resource Commission Policy and Procedure 39.21-20, Beaver Management, issued July 11, 2005.
2. DNR Forest Certification Work Instruction 1.4 – Biodiversity Management on State Forest Lands.
3. DNR Forest Certification Work Instruction 3.1 – Forest Operations

**Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicator 1.3  
 Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicators 2.1, 2.3, 2.5, 2.7

**4.1.2.5 - Rare Communities**

**Desired Future Condition:**

The State Forest maintains, enhances and restores the viability of known rare communities within the context of other ecological and socio-economic values.

**Goals:**

1. Maintain, enhance or restore natural species composition and ecological functions in Ecological Reference Areas.
2. Develop and pursue strategies to conduct field surveys and assessments for rare, threatened, and endangered species and communities on State Forestlands.

**Objectives:**

1. Conduct field surveys and assessments for rare, threatened, and endangered species and communities on State Forestlands.
2. Coordinate with other ownerships in the regional landscape on the conservation of High Conservation Value Areas.

**Standards:**

1. DNR Forest Certification Work Instruction 1.4 – Biodiversity Management on State Forest Lands.
2. DNR Forest Certification Work Instruction 3.1 – Forest Operations.

**Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicator 1.1

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicator 2.4

**Guidelines:**

1. Use community abstracts developed by the Michigan Natural Features Inventory as additional reference in the identification and management of rare communities.

**4.1.3 - Watershed Management****4.1.3.1 - Soil Resources****Desired Future Condition:**

The State Forest System has soils that are identified and mapped. Forest uses conserve and improve soil resources to support diverse ecosystems, and do not exceed the resiliency capacity of soil resources to recover from disturbances resulting from particular ecological or socio-economic uses.

**Goals:**

1. Manage the State Forest to maintain or improve the fertility and productivity of soil resources.
2. Stabilize and restore sites with disturbed soil conditions.

**Objectives:**

1. Implement best management Practices (BMPs) for all intrusive operations where there is a potential for soil disturbance.
2. Consider the role that soil biomass serves as a global sink for carbon sequestration in forest management operations.
3. Manage riparian areas to minimize the erosion of soil into aquatic systems.

**Standards:**

1. Forest, Mineral and Fire Management Division Policy and Procedure 251, Sale and Removal of Timber, issued March 1, 2000.
2. DNR Forest Certification Work Instruction 3.1 – Forest Operations.
3. DNR Forest Certification Work Instruction 3.2 – Best Management Practices Non-Conformance Reporting Instructions.

**Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicators 2.6, 2.8

**Guidelines:**

1. Follow BMP guidelines (Michigan Department of Natural Resources 2006c) to minimize the erosion of soil and organic matter, and the resultant loss in site productivity.
2. Improve soils by promoting the generation and maintenance of soil organic matter content, nutrient retention and cycling through the preservation of soil detritus upon the floor of forest stands, and avoid practices that erode or remove topsoil (O and A soil horizons).
3. Use soil maps and field investigation of possible soil inclusions to identify wet soils that are vulnerable to compaction and rutting, and avoid actions (such as harvesting during wet seasons) that will cause excessive soil disturbance.
4. Flag and buffer wetland areas from vehicle traffic.

**4.1.3.2 - Riparian Areas & Wetlands****Desired Future Condition:**

The State Forest System has watersheds and wetlands that are identified and mapped. The wetlands are resilient to natural and human induced disturbances, and in addition to socio-economic uses they provide ecosystem services such as habitat, flood attenuation, sediment filtration, water purification and groundwater recharge.

**Goals:**

1. Manage riparian management zones (RMZs) to maintain and enhance natural aesthetic values and free-flowing conditions for warm, cool and coldwater streams, and for values to include water quality, aquatic habitat, recreation, forest products, wildlife habitats, travel corridors, threatened and endangered species, unique ecological communities and cultural resources.
2. Manage, restore and improve wetlands to ensure self-sustaining populations of associated fish and wildlife species.

**Objectives:**

1. Contribute to the statewide objective of restoring and/or creating 30,000 acres of wetlands contiguous with grasslands.
2. Identify naturally functioning wetland resources using Michigan Department of Environmental Quality inventory maps, and conserved, restored or enhanced, with specific priority given to the protection, restoration of Great Lakes coastal marsh, inland emergent marsh and wet prairie communities.
3. Advocate dam removal to restore rivers and streams to free-flowing conditions where non-productive or unsafe dams are present.
4. Manage beaver populations to sustain pond habitat while minimizing adverse effects upon coldwater stream habitats and road and trail crossings.
5. Manage riparian areas located within designated State Natural River systems in accordance with adopted Natural River Plans.
6. Manage riparian areas located within designated Federal Wild and Scenic River systems in accordance with Federal management plans.
7. Manage wetlands for water quality benefits, biodiversity values, wildlife habitat and timber production.
8. Maintain seasonal wetlands and to restore any degraded conditions.

**Standards:**

1. DNR Natural Resource Commission Policy and Procedure 39.21-20, Beaver Management, issued July 11, 2005.
2. Forest, Mineral and Fire Management Division Policy and Procedure 251, Sale and Removal of Timber, issued March 1, 2000.
3. Interim Guidelines for Evaluating Riparian Management Zones on State Lands (Michigan Department of Natural Resources 2004b).
4. DNR Forest Certification Work Instruction 3.1 – Forest Operations.
5. DNR Forest Certification Work Instruction 3.2 – Best Management Practices Non-Conformance Reporting Instructions.

**Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicators 2.1, 2.5, 2.7, 2.8

**Guidelines:**

1. Conduct evaluation and management of RMZs using the guidelines contained in “Evaluating Riparian Management Zones on State Lands” (Michigan Department of Natural Resources 2004b).

#### **4.1.4 – Rare Species**

##### **4.1.4.1 - Federal and State Threatened and Endangered Species**

###### **Desired Future Condition:**

The State Forest provides sufficient habitat conditions suitable for the maintenance and expansion of Federal and State threatened and endangered species populations. This includes specific habitat needs for plant and animal species that do not satisfactorily respond to landscape or ecosystem-based habitat conservation approaches.

###### **Goals:**

1. Cooperate with the U.S. Fish and Wildlife Service in the identification and recovery of Federal listed threatened and endangered species that occur upon State Forest lands.
2. Provide habitat for the conservation, protection, restoration and propagation of all Federal and State listed threatened and endangered species, while also taking into consideration other uses of the forest.
3. Protect all known occurrences of Federally and State listed threatened and endangered species on state owned lands with primary emphasis directed toward the most viable occurrences.
4. Monitor the progress and status of all Federally and State listed threatened and endangered species on state owned lands.
5. Work toward identifying research needs on State Forest lands for Federally or State listed species.
6. Develop and distribute effective outreach and conservation tools to State Forest land stakeholders.

###### **Objectives:**

1. Avoid the taking of any Federal or State threatened or endangered wildlife species in all situations, except under permit.
2. Identify, protect, maintain, and/or enhance critical habitat essential for the health of threatened and endangered species populations.
3. Communicate known occurrences of Federal and State listed species to land managers in all divisions prior to planned intrusive work activities.
4. Conduct field surveys of suitable habitats with other partners and volunteers to identify new occurrences of Federal or State listed plant or animal species, evaluate recovery possibilities at discovered sites and verify extent and status of historically documented sites.
5. Determine population status and habitat requirements, and threats to Federally and State listed species.
6. Evaluate effectiveness of management actions that address threats to Federal and State listed species populations, such as habitat destruction and loss from increased development and recreation, industrial and agricultural impacts, disease, predation, inadequate protection by existing laws, pollution, hydrological disruptions, and competition from introduced non-natives.

7. Wherever possible, control competition and habitat alteration by invasive plants.
8. In association with partners, develop management guidelines or recovery plans for threatened and endangered species and their habitats.
9. Encourage the acquisition of lands to benefit the conservation and restoration of Federal and State listed threatened and endangered species.
10. Develop and maintain communication with Federal and State agencies, the Ontario Province of Canada, local governments, tribal agencies, private landowners, land conservancies, and private sector agencies regarding the known presence, maintenance, and restoration of all known Federal and State listed threatened and endangered species potentially occurring on their ownerships.
11. Provide training to DNR staff on threatened and endangered species identification and natural history.

#### **Standards:**

1. Part 365, Endangered Species Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
2. The Endangered Species Act of 1973, Public Law 93-205, 87 Stat. 884
3. Any activity on state forestland that may take a Federal or State threatened or endangered species must be coordinated with the DNR Endangered Species Coordinator. Permits are required for any activity that results in the take of a threatened or endangered species. Permits may be issued only for scientific, zoological, or educational purposes, or for propagation in captivity to ensure survival of a species. The DNR Endangered Species Program coordinates permit requirements for federally listed species with the U.S. Fish and Wildlife Service.
4. Specific location data of Federal and State threatened and endangered species cannot be provided to the public without express approval of the DNR Endangered Species Coordinator. All comments regarding T & E species for Compartment Review should be placed in "locked comments" in the Operations Inventory database.
5. DNR Forest Certification Work Instruction 1.4 – Biodiversity Management on State Forest Lands.
6. DNR Forest Certification Work Instruction 3.1 – Forest Operations

#### **Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicators 1.1, 1.2, 1.3

#### **Guidelines:**

1. Maintain identified habitats for Federal and State threatened and endangered (T&E) species.
2. Consider restoration of degraded T&E habitat when such potential areas are identified.



3. Prior to development of management plans or the implementation of management prescriptions, conduct surveys where identification of a community type indicates the probability of a Federal or State listed plant or animal being in or near a proposed forest treatment. Requests for survey work should be forwarded through the Forest Management Unit Manager to the Forest Resource Management Section Manager.
4. Report locations of newly discovered species and previously unknown occurrences of all special concern species to the Michigan Natural Features Inventory.
5. Use MNFI Species and Natural Community abstracts as additional reference in the identification and management of threatened and endangered species.
6. Refer conflicts, or potential conflicts, in the management of listed species to the DNR Endangered Species Program Coordinator for assistance.
7. Use the U.S. Fish and Wildlife Service, Region 9 Conservation Assessments and Approaches.

#### **4.1.4.2 – Species of Special Concern**

##### **Desired Future Condition:**

The State Forest provides habitat suitable for the maintenance and expansion of Special Concern species populations, within the context of other ecological and socio-economic uses. This includes specific habitat needs for wildlife species that do not satisfactorily respond to landscape or ecosystem-based habitat conservation approaches.

##### **Goals:**

1. Provide habitat for the conservation, protection, restoration and propagation of species of special concern, while also taking into consideration other uses of the forest.
2. Protect all known occurrences of species of special concern and their habitats on all state-owned lands.

##### **Objectives:**

1. Identify, protect, maintain, and/or enhance critical habitat essential for the health of special concern species.
2. Conduct field surveys of suitable habitats with other partners and volunteers to identify new occurrences of Special Concern plant or animal species, evaluate recovery possibilities at discovered sites and verify extent and status of historically documented sites.
3. Determine population status and habitat requirements, and threats to species of special concern.
4. Evaluate effectiveness of management actions that address threats to special concern species populations, such as habitat destruction and loss from increased development and recreation, industrial and agricultural impacts, disease, predation, inadequate

- protection by existing laws, pollution, hydrological disruptions, and competition from introduced non-natives.
5. Communicate through MNFI comments and compartment reviews the known occurrences of species of special concern to land managers in all divisions prior to planned intrusive work activities.
  6. Avoid the taking of any species of Special Concern.
  7. Develop management guidelines for species of special concern and their associated habitats using the best available science.
  8. Eliminate competition from non-native species whenever and wherever possible.
  9. Provide training to DNR staff on species of special concern identification and natural history.

**Standards:**

1. DNR Forest Certification Work Instruction 1.4 – Biodiversity Management on State Forest Lands.
2. DNR Forest Certification Work Instruction 3.1 – Forest Operations

**Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicators 1.1, 1.2, 1.3

**Guidelines:**

1. When and where possible, treat Special Concern and Federal Candidate Species with similar management consideration as threatened and endangered species (as appropriate to Federal or State listing).
2. When completed, consider Candidate Conservation Agreements with Assurances (CCAAs) in management planning and implement whenever applicable.
3. Maintain identified habitats for special concern species.
4. Consider restoration of degraded habitat when such potential areas are identified.
5. Prior to development of management plans or the implementation of management prescriptions, conduct surveys where identification of a community type indicates the probability of a special concern plant or animal being in or near a proposed forest treatment. Requests for survey work should be forwarded through the Forest Management Unit Manager to the Forest Resource Management Section Manager.
6. Report locations of newly discovered species and previously unknown occurrences of all special concern species to the Michigan Natural Features Inventory (MNFI).
7. Use MNFI Species and Natural Community abstracts as additional reference in the identification and management of species of special concern.
8. Use the U.S. Fish and Wildlife Service, Region 9 Conservation Assessments and Approaches.

## **4.1.5 - Land Ownership and Use Management**

### **4.1.5.1 - Easements**

#### **Desired Future Condition:**

The State Forest is managed to provide reasonable access for public or private purposes in the form of easements, subject to other ecological and socio-economic uses of the forest resource. The DNR holds conservation easements upon private lands to maintain ecological values of landscape level forests and to provide public access to these lands for socio-economic purposes.

#### **Goals:**

1. Maintain easements which have been purchased for the purpose maintaining public access to forest lands or other facilities.
2. Preserve existing easements upon State Forest land for uses such as private access and utility corridors.
3. Evaluate applications for new easements upon State Forest land for fragmentation and biodiversity impacts.
4. Actively seek to acquire conservation easements upon large tracts of forest lands, as well smaller parcels possessing significant ecological or social-economic values.

#### **Standards:**

1. DNR Natural Resources Commission Policy and Procedure 26.01-01, Use Permits and "Department as Lessor" Leases – Question and Answer Reference, issued January 13, 2005.
2. DNR Natural Resource Commission Policy and Procedure 26.26-16, Permit and Easement Administration on State Lands, issued July 11, 2005.
3. DNR Natural Resource Commission Policy and Procedure 28.46-05, Easement for the Use of State Lands, issued July 11, 2005.
4. Utility easements shall not be granted on state land in legally dedicated wilderness, wild area or natural area, except in the case where a right-of-way or an easement for ingress and egress was granted on land prior to its dedication.
5. DNR Forest Certification Work Instruction 6.2 – Integrating Public Recreational Opportunities with Management on State Forest Lands

#### **Monitoring Criteria:**

Statewide Criterion 5 – Ownership Patterns, Indicators 5.1, 5.2

Private lands conservation easement terms

#### **Guidelines:**

1. Relinquished jurisdiction of either existing DNR roads or rights-of-way for proposed roads or portions thereof to other agencies only through

"due process", as provided by law. Such procedure should include the proper encumbrance of State land records through the issuance by the DNR of a duly executed easement designating the right-of-way alignment and width along with other pertinent information.

#### **4.1.5.2 - Use Permits and Surface Lease Uses**

##### **Desired Future Condition:**

The State Forest is managed to provide reasonable access for public or private purposes by use of use permits and surface leases, subject to other ecological and socio-economic values of the forest resource.

##### **Goals:**

1. Subject to other management objectives, provide and maintain special use permits for private use of the forest.

##### **Standards:**

1. DNR Natural Resources Commission Policy and Procedure 26.01-01, Use Permits and "Department as Lessor" Leases – Question and Answer Reference, issued January 13, 2005.
2. DNR Natural Resource Commission Policy and Procedure 26.04-04, Use of State-Owned Lands Administered by the Michigan Department of Natural Resources, issued February 1, 2006.

##### **Monitoring Criteria:**

Statewide Criterion 4 – Recreation, Indicator 4.6

#### **4.1.5.3 - Acquisition and Disposal**

##### **Desired Future Condition:**

Acquisition and disposal of land consolidates DNR ownership, improves access, habitat connectivity, and recreational opportunities, and protects unique natural resource and cultural values which are best held in long-term public ownership.

##### **Goals:**

1. Review all lands lying outside of dedicated state forest boundaries to determine which of those lands are not contributing sufficiently to the DNR mission to warrant their continued ownership by the DNR.
2. Exchange or sell those lands that are not contributing to the DNR mission for land of greater natural resource or recreational value, with proceeds used to purchase private land located within dedicated state forest boundaries.
3. Acquisition of private in-holdings is a priority.

**Standards:**

1. DNR Natural Resources Commission Policy and Procedure 26.01-01, Use Permits and “Department as Lessor” Leases – Question and Answer Reference, issued January 13, 2005.

**Monitoring Criteria:**

Statewide Criterion 5 – Ownership Patterns, Indicators 5.2, 5.3

**4.1.5.4 - Boundary Designation and Signage****Desired Future Condition:**

State Forest land has clearly defined boundaries which facilitate public land administration for all ecological and socio-economic values of the State Forest.

**Goals:**

1. Manage the boundaries of the State Forest for the mutual respect of both public and private lands.

**Objectives:**

1. Conduct surveys and place boundary signs clarifying the limits of concentrated recreation sites in order to prevent trespass upon private properties.
2. Provide notice of the area designation and of restricted activities by posting signs in appropriate locations along the borders of State Parks, wilderness areas, wild areas, and natural areas.
3. Designate timber sale boundaries adjacent to other ownerships with paint to avoid trespass.
4. Locate and survey all property corners on state land.
5. Protect surveyed property corners in the contract language of commercial and non-commercial forest prescriptions.

**Monitoring Criteria:**

Statewide Criterion 5 – Ownership Patterns, Indicators 5.2, 5.3

**4.1.6 - Minerals & Geology****4.1.6.1 – Oil, Gas and Metallic and Non-Metallic Mineral Development****Desired Future Condition:**

The State Forest provides for the extraction of oil, gas and mineral resources for the benefit of people and the economy of the State without negatively impacting the sustainability of healthy ecosystems or other socio-economic values.

**Goals:**

1. Develop oil, gas and metallic and non-metallic minerals in a manner consistent with public interest and natural resource values and in a manner to ensure an optimum economic return to the State, competition for the acquisition of leases, and protection of the environmental, recreational and other uses of the land.

**Objectives:**

1. Manage state owned oil, gas and metallic and non-metallic minerals in a manner that protects and enhances the public trust.
2. Encourage the private sector rather than the State to risk capital in exploration and development.
3. Seek to optimize revenue from State-owned oil, gas and metallic and non-metallic resources, consistent with other natural resource management objectives and with consideration of other uses of the forest.
4. Maintain ecosystem integrity and function in areas of oil, gas and metallic and non-metallic development.

**Standards:**

1. DNR Natural Resource Commission Policy and Procedure 26.04-04, Use of State-owned lands administered by the MDNR, issued February 1, 2006.
2. DNR Natural Resource Commission Policy and Procedure 26.50-02, Underground Gas Storage Leases – State-owned Lands, issued July 11, 2005.
3. DNR Natural Resource Commission Policy and Procedure 27.01-28, Retention of Mineral Rights, issued July 11, 2005.
4. DNR Natural Resource Commission Policy 27.23-01, Great Lakes Bottomlands Leases – Sand, Gravel, Stone and Fill Material, issued March 11, 2005.
5. DNR Natural Resource Commission Policy and Procedure 27.23-07, Gas Transmission and Distribution Lines – Reporting of Breaks in Gas Lines, issued July 11, 2005.
6. DNR Natural Resource Commission Policy and Procedure 27.23-08, Sale or Reservation of Mineral and Allied Rights in Tax-Reverted Lands, issued July 11, 2005.
7. DNR Natural Resource Commission Policy and Procedure 27.23-09, Nonmetallic Minerals on State Lands, issued July 11, 2005.
8. DNR Natural Resource Commission Policy and Procedure 27.23-12, Metallic Minerals Leasing Policy –State-Owned Lands, issued July 11, 2005.
9. DNR Natural Resource Commission Policy and Procedure 27.23-13, Oil and Gas Wellsite Applications – State-Owned Lands, issued July 11, 2005.
10. DNR Natural Resource Commission Policy and Procedure 27.23-14, Oil and Gas Leasing Procedure, issued July 11, 2005.

11. DNR Natural Resource Commission Policy and Procedure 27.23-15, Oil and Gas Lease Classification Procedure, issued July 11, 2005.
12. DNR Natural Resource Commission Policy and Procedure 27.23-16, Minerals Management Procedures, issued July 11, 2005.
13. DNR Natural Resource Commission Policy and Procedure 27.23-18, Oil and Gas Lease Maintenance Procedures, issued July 11, 2005.
14. DNR Forest Certification Work Instruction 3.1 – Forest Operations.
15. DNR Forest Certification Work Instruction 3.2 – Best Management Practices Non-Conformance Reporting Instructions.

**Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicator 2.1  
 Statewide Criterion 6 – Economic Health, Indicators 6.1, 6.2

**4.1.6.2 - Unique Geologic Formations**

**Desired Future Condition:**

Michigan's geologic features (including waterfalls, Great Lakes fossil beds, karst features, sand dunes and the Lake Superior Syncline) provide an opportunity for education about the geology of Michigan and a variety of ecological and socio-economic values to the citizens of the State.

**Goals:**

1. Manage for protection, preservation and the public trust identified unique geological features under State ownership.

**Objectives:**

1. Provide reasonable access to unique geological features while protecting them for future generations.
2. Protect and manage unique geological features that are co-located upon privately-owned property and upon DNR lands in a cooperative manner.
3. Recognize in ecoregional management plans unique geological features that are located entirely upon other public or privately-owned properties within the landscape.

**Standards:**

1. DNR Forest Certification Work Instruction 3.1 – Forest Operations.

**Monitoring Criteria:**

Statewide Criterion 3 – Social/Cultural/Spiritual, Indicator 3.2

**Guidelines:**

1. Use tools such as acquisition and purchase of development rights to protect unique geological formations that are co-located upon DNR and private property.

**4.1.7 - Forest Pest Management****4.1.7.1 – Insects and Disease****Desired Future Condition:**

The State Forest is maintained in a healthy condition that minimizes loss of ecological and socio-economic productivity and values due to insect and disease infestations.

**Goals:**

1. Protect forest health by using Integrated Pest Management (IPM) principles to monitor, detect, evaluate and perform non-regulatory control of all forest pests on State lands, to reduce losses in forest productivity from reduced growth rates and increased mortality, and to improve the quality and quantity of forest resource commodity yields and non-commodity values by minimizing the negative impact of forest insects and disease.
2. Conduct pest detection, monitoring and evaluation programs on private land while assisting private forest landowners regarding the need for control and appropriate control efforts and procedures.

**Objectives:**

1. Promote healthy and productive forest conditions by using silvicultural systems and prescriptions to lower natural susceptibility and vulnerability of timber stands to insect and disease outbreaks.
2. Tolerate endemic levels of pest populations in order to minimize the use of chemical pesticides and biological control agents in the achievement of management objectives.
3. Prescribe salvage cuts where forest stands are predisposed or subject to severe disease or insect infestations.
4. Identify potential pests and assess their potential effect upon identified key landownership values, State Forest management objectives, and the management needs of forest stands.
5. Use surveys on both state and private forestland to regularly monitor pest populations, symptoms of insects and disease in stand conditions, and stresses which may predispose stands to secondary pests. Economically and socially sound alternatives will be recommended to minimize the impact of insect or disease problems.
6. Use all appropriate tools and tactics in Forest Pest Management (FPM) to prevent economically significant pest damage without disrupting the environment.



7. Acquire and deliver pest management information that is credible, accurate, and scientifically valid to field staff.

**Standards:**

1. DNR Natural Resource Commission Policy and Procedure 28.46-03, Pesticides and other Toxic and/or Persistent Chemicals – Use of in Department Programs, issued July 11, 2005.
2. DNR Forest Certification Work Instruction 2.2 – Use of Pesticides and other Chemicals on State Forest Lands.
3. DNR Forest Certification Work Instruction 2.3 – Integrated Pest Management and Forest Health.
4. FMFM Policy and Procedures No. 591, Forest Pest Management, dated June 14, 1988.
5. FMFM Policy and Procedures No. 592, Pesticide Use, dated October 26, 1999.
6. FMFM Policy and Procedures No. 593, Gypsy Moth Management Policy, dated June 14, 1988.

**Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicator 2.1

**Guidelines:**

1. Seek input from a variety of forest resource specialists and managers to fully implement FPM.
2. Where disease infestation or fire/windthrow disturbance mortality is extensive, pre-salvage or salvage of forest products may be appropriate within the limits necessary for the maintenance of nutrient cycles and diversity of stand structure.
3. Where non-native insects threaten the health and functioning of native ecosystems more immediate and proactive controls may be appropriate.
4. Utilize chemical pesticides when they are legal, reasonably cost effective, meet management objectives, and optimize the natural mortality factors in the ecosystem to reduce or maintain populations of organisms at tolerable or endemic levels. Economic, ecological, and social values will be used in determining tolerable levels.
5. Use alternatives to chemical pesticides when they are legal, reasonably cost effective, and available and meet management objectives. When chemical pesticides are used, the least-toxic, narrowest spectrum products labeled for the target species should be selected.
6. When using biological controls to kill pests, use only host specific predators, parasites and pathogens with proven effectiveness.
7. Use silvicultural management to manipulate the environment to make it more favorable for plant growth and less favorable for pest growth.
8. Use cultural controls, such as good site selection, harvesting trees before becoming over-mature, or planting resistant varieties, to prevent pest populations from building to unacceptable levels.

#### **4.1.7.2 - Invasive Species**

##### **Desired Future Condition:**

The State Forest is free from invasive plant and animal species that degrade ecological and socio-economic values and productivity, or the biological impact of such species is mitigated to the extent possible.

##### **Goals:**

1. Monitoring, detecting, evaluating and controlling the extent of non-native, invasive plant and animal species on the State Forest.

##### **Objectives:**

1. Work to document the location, scope and type of invasive plant and animal species on the State Forest.
2. Use forest management prescriptions to control and eradicate undesired invasive plants and animals.
3. Where eradication of undesired invasive species is not possible, control such populations using chemical or species specific biological means.
4. Cooperate in detection, monitoring and evaluation programs on private lands while assisting private forest landowners regarding the need for control and appropriate control efforts and procedures.
5. The planting of native species is given preference over non-native tree and other plant species (which should be minimized and only planted after research documentation that they pose minimal ecological risk).

##### **Standards:**

1. Part 413, Transgenic and Non-Native Organisms, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
2. DNR Forest Certification Work Instruction 2.1 – Reforestation.
3. DNR Forest Certification Work Instruction 2.2 – Use of Pesticides and other Chemicals on State Forest Lands.
4. DNR Forest Certification Work Instruction 2.3 – Integrated Pest Management and Forest Health.

##### **Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicator 2.1

##### **Guidelines:**

1. Use prescribed fire and mechanical and herbicide treatments to eradicate invasive plant species.
2. Use Policies and Procedures of the appropriate managing DNR division to guide the management and control of specific invasive plant or animal species.

## **4.1.8 - Fire Management**

### **4.1.8.1 - Fuel Management**

#### **Desired Future Condition:**

The State Forest is managed to maintain fuel loads within the range of natural specific ecosystem variability in order to minimize adverse impact to ecological and socio-economic values.

#### **Goals:**

1. Reduce excessive fuel loads outside of the natural range of variability for specific community types to reduce the hazard of catastrophic wildfires to forest resources and public and private facilities.
2. Work with other fire agencies and local units of government to encourage land owners and residents within the Wildland-Urban Interface to reduce excessive fuel loads and to establish “defensible space” landscapes around structures.

#### **Objectives:**

1. Prescribe salvage cuts where appropriate to reduce fuel loads in areas with extensive mortality due to disease or insect infestations, while also considering the biodiversity values associated with snags and large woody debris.
2. Reduce the potential for large crown fires in conifer species by reducing the occurrence of fuel ladders, excessive basal area and inadequate crown spacing.
3. Identify “communities at risk” and “fire prone landscapes” as geographic areas of possible concern. These areas should have periodic fuel assessments done to determine if further action is warranted.

#### **Standards:**

1. Forest, Mineral and Fire Management Division Policy and Procedure 251, Sale and Removal of Timber, issued March 1, 2000.

#### **Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicators 2.1, 2.4

#### **Guidelines:**

1. Through forest management prescriptions, strive to balance the retention of forest litter, large woody debris and snags with a reduction of excessive fuel loads that can contribute to catastrophic stand fires, which result in the loss of biomass and the alteration of carbon balances.

#### **4.1.8.2 - Prescribed Fire**

##### **Desired Future Condition:**

The State Forest employs prescribed fire as a natural management tool, within the context of other ecological and socio-economic uses.

##### **Goals:**

1. Use prescribed fire as a natural tool for maintaining healthy conditions in fire-adapted ecosystems and landscapes.
2. Use prescribed fire to help maintain fuel breaks.

##### **Objectives:**

1. Prioritize all approved Department prescribed burns by October 1st of each year.
2. Use prescribed burning in the forest stands to reduce competition for the growth of desired herbaceous and woody vegetation and for site preparation for forest regeneration.
3. Use prescribed burning in grassland areas to control encroachment by brush and trees.
4. Use prescribed burning in dedicated State Natural Areas and other areas of the State Forest that contain communities where periodic fire is a natural ecologic process for the purpose of simulating natural conditions for the preservation or restoration of plant or wildlife species.
5. Use prescribed burning on other DNR-owned lands within the landscape (Parks Division and Wildlife Division managed areas).
6. As determined by OI/IFMAP prescriptions and within weather and budgetary constraints, attempt to conduct a minimum of 100 prescribed burns each year on the State Forest.
7. Use prescribed fire to maintain fuel breaks on a 3-4 year rotation.
8. Conduct on an annual basis as many priority one prescribed burns as possible to restore or maintain needed habitat and to prepare sites for forest regeneration work.

##### **Standards:**

1. DNR Natural Resources Commission Policy and Procedure 33.42-08, Prescribed Burning, issued July 11, 2005.
2. DNR Natural Resources Commission Policy and Procedure 33.42-09, Wildfires in State Natural Areas, issued July 11, 2005.
3. FMFM Policy and Procedure 512, Annual Fire Plan, dated December 13, 1999.
4. FMFM Policy and Procedure 581, Prescribed Burning, undated.

##### **Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicator 2.1

**Guidelines:**

1. Judiciously use prescribed fire in order to maintain and restore species biodiversity in fire adapted ecosystems.

**4.1.8.3 - Fire Prevention****Desired Future Condition:**

The State Forest is free from human-caused wildfire, in order to minimize adverse impact to ecological and socio-economic values.

**Goals:**

1. Reduce the number of human caused wildfires.
2. Reduce the risk of large crown fires in conifer cover types.

**Objectives:**

1. Work in conjunction with other wildfire agencies to raise the public awareness of wildfire conditions during periods of high wildfire danger.
2. Use prescribed burns for the purpose of reducing fuel loads before hazardous conditions are reached, especially to reduce the potential for large crown fires in conifer cover types.
3. Reduce the number of human caused wildfires through public education and the regulation of open burning with the issuance of burn permits.

**Standards:**

1. FMFM Policy and Procedure 521, Forest Fire Law, dated June 16, 1981.
2. FMFM Policy and Procedure 522, Control of Open Burning, dated June 16, 1981.
3. FMFM Policy and Procedure 561, Smokey Bear Costume, dated February 15, 2001.

**Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicators 2.1, 2.4

**4.1.8.4 - Fire Suppression****Desired Future Condition:**

The DNR protects the health and safety of the public by effectively coordinating the suppression of wildfires that occur upon all ownerships within a protection area, incorporating the need to protect private property and ecological and socio-economic values, and also ensuring the health and safety of firefighters.

**Goals:**

1. The DNR Forest, Mineral and Fire Management Division functions as the lead agency in wildfire management in the state.
2. Forest, Mineral and Fire Management Division field offices are staffed and equipped to provide wildfire suppression action as called for in Fire Management Plans.
3. Provide wildfire training to DNR fire officers and local fire department personnel per an agreement with the Michigan Fire Fighter's Training Council. All DNR firefighters will be trained to National Wildfire Coordinating Group (NWCG) standards as laid out in the Forest, Mineral and Fire Management training standards.
4. Participate in state wide interagency wildfire organizations and the Great Lakes Forest Fire Compact.

**Objectives:**

1. Work in conjunction with other wildfire agencies to attempt to contain most wildfires to 10 acres or less in size.
2. Ensure that annual refresher training for DNR wildland firefighters includes familiarization with assigned wildland fire equipment.
3. Promote efforts designed to increase the capability of local fire departments, including programs such as the Volunteer Fire Assistance Program, Federal Excess Property Program, GSA Purchasing Program and FFTC Wildland Fire Training Programs.
4. Review employee training and qualification records annually to assure that they progress toward and maintain wildland fire suppression qualifications identified for them in the "Michigan Addendum to the National Wildfire Coordinating Group (NWCG) National Interagency Incident Management System (NIIMS) Wildland Fire Qualification System Subguide PMS 310-1".
5. Encourage DNR FMFM land managers and other DNR employees to maintain wildland fire qualifications and CDL qualifications.
6. Conduct wildfire detection according to daily fire danger levels.
7. On each wildfire incident under DNR jurisdiction, implement the Incident Command System (ICS) to guarantee safe and effective conduct of the suppression effort.
8. Ensure that the Incident Commander (IC) conducts an After Action Review (AAR) for all incidents that have at least 3 responding resources, and that the Marquette and Roscommon Incident Coordination Centers conduct an Administrative Fire Analyses for all Type 3 incidents managed by MDNR.

**Standards:**

1. DNR Natural Resources Commission Policy and Procedure 33.42-09, Wildfires in State Natural Areas, issued July 11, 2005.
2. FMFM Policy and Procedure 111, Field Office Staff/Hours of Work for Fire Control, dated May 19, 2004.
3. FMFM Policy and Procedure 141, Wildfire Training for Fire Departments, dated October 22, 1999.

4. FMFM Policy and Procedure 161, Physical Fitness Standards, dated February 17, 2000.
5. FMFM Policy and Procedure 512, Annual Fire Plan, dated December 13, 1999.
6. FMFM Policy and Procedure 511, Five-Year Unit Management Planning, undated.
7. FMFM Policy and Procedure 513, Administrative Fire Analysis, undated.
8. FMFM Policy and Procedure 514, Incident Command System
9. FMFM Policy and Procedure 521, Forest Fire Law, dated June 16, 1981.
10. FMFM Policy and Procedure 542, Fire Operations Involving Structures, dated March 24, 1988.
11. FMFM Policy and Procedure 572, Wildfires in State Natural Areas, dated March 15, 2001.
12. DNR Forest Certification Work Instruction 8.1 – MDNR Staff Training for State Forest Management.

**Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicator 2.1

**4.1.9 - Transportation System**

**4.1.9.1 - Road Maintenance**

**Desired Future Condition:**

The forest road system will be maintained for operation within accepted safety and environmental standards, providing for a variety of socio-economic values of the State Forest.

**Goals:**

1. Provide a means of inventorying road infrastructure and tracking the maintenance needs of the State Forest road system.
2. Seek to minimize adverse effects upon inland stream, lake and wetland resources during the maintenance of forest roads.
3. Minimize public safety hazards during the maintenance of forest roads.

**Objectives:**

1. Inventory and construct a GIS data layer for the entire DNR road system, to include a systematic number identification system for the entire network.
2. Implement a road maintenance database for use in reporting, prioritizing, tracking and repairing BMP violations and other road improvement needs.
3. Repair, re-route or close forest roads with soil erosion and sedimentation problems, failed bridges or culverts or other public safety issues.
4. Maintain State Forest roads in accordance with best management practices.

**Standards:**

1. DNR Forest Certification Work Instruction 3.1 – Forest Operations.
2. DNR Forest Certification Work Instruction 3.2 – Best Management Practices Non-Conformance Reporting Instructions.

**Monitoring Criteria:**

Statewide Criterion 2 – Ecosystem Condition and Productivity, Indicators 2.5, 2.8

**Guidelines:**

1. All road maintenance should conform with Water Quality Management Practices on Forest Land (Michigan Department of Natural Resources 2006c).

**4.1.9.2 - Road Closure****Desired Future Condition:**

The extent of the State Forest road system (both permanent and temporary roads) will be limited to that necessary to provide adequate access for management of the forest and for access for recreation and other ecological and socio-economic values.

**Goals:**

1. To minimize fragmentation, littering and resource damage to the forest, consider closure of roads that are not needed for access or management purposes and that are not part of a designated trail system.
2. Close or re-route roads that pose threats to threatened or endangered species, cultural and historic sites, or sensitive sites such as unique geological areas.

**Objectives:**

1. Identify roads that are significantly contributing to forest fragmentation, public safety or environmental quality (persistent soil erosion and sedimentation to lakes, stream or wetlands).

**Standards:**

1. DNR Natural Resource Commission Policy and Procedure 26.26-22, Closing of Logging Roads Constructed on State-Owned Land - Region I and II, issued July 11, 2005.
2. DNR Natural Resource Commission Policy and Procedure 26.26-24, Private and Public Roads; Road Closures Affecting use of State Lands; Reporting Road Closures, issued July 11, 2005.



3. DNR Forest Certification Work Instruction 3.2 – Best Management Practices Non-conformance Reporting Instructions.
4. DNR Forest Certification Work Instruction 3.3 – Road Closures.

**Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicator 1.2

Statewide Criterion 3 – Social/Cultural/Spiritual, Indicator 3.3

Statewide Criterion 4 – Recreation, Indicator 4.2

**Guidelines:**

1. An emergency road closure may be invoked when there is a public safety and/or a significant environmental concern, which includes, but is not limited to: deep rutting or the potential for deep rutting, sediment flow into a stream, flooding, failure of a bridge, culvert failure that results in significant stream sedimentation, threats to threatened or endangered species, and threats to unique geological areas and special cultural or historic sites.
2. Discuss proposed non-emergency road closures in the public forum of compartment review process.
3. Restrict vehicle access on roads where there is a high potential for damage to natural resources.
4. A road constructed by a permittee on an old unused logging road or at a new location may be temporarily closed by the permittee for specific days during the period the timber sale permit is in force providing they do not use the road. If the permittee uses the road for any purpose, it shall be open to the public. A road which shows evidence of use before reconstruction or repair shall not be closed, even though it is repaired by the permittee. Lack of shrub or tree growth shall be considered evidence of use.

**4.1.9.3 – New Roads**

**Desired Future Condition:**

The construction of new permanent and temporary roads in the State Forest will be limited to those necessary to provide adequate access for management of the forest and for access for recreation and other ecological and socio-economic values.

**Goals:**

1. To prevent further fragmentation of currently intact forest areas, minimize the number and length of new logging roads and skid trails and make such roads temporary in nature.
2. Discourage new permanent roads for use in accessing private holdings by crossing State Forest lands.

**Objectives:**

1. Consider the social and economic values associated with or impacted by new road construction, which include: utilization, forest health, fire protection, recreation, cultural uses, historical sites, and the administration of State lands to protect the public health and safety and private access.
2. Give consideration to long-term funding opportunities and obligations in the construction and maintenance of new roads.
3. Consider environmental impacts upon the maintenance of ecological processes, introduction of invasive species, effects on threatened and endangered species and areas of high unique biodiversity in new road planning.
4. Engineer and build new State Forest roads in accordance with best management practices.

**Standards:**

1. DNR Forest Certification Work Instruction 3.1 – Forest Operations.
2. DNR Forest Certification Work Instruction 3.2 – Best Management Practices Non-Conformance Reporting Instructions.

**Monitoring Criteria:**

Statewide Criterion 1 – Conservation of Biological Diversity, Indicator 1.2

Statewide Criterion 3 – Social/Cultural/Spiritual, Indicator 3.3

Statewide Criterion 4 – Recreation, Indicator 4.2

Statewide Criterion 5 – Ownership Patterns, Indicators 5.2, 5.3

**Guidelines:**

1. Construction of all new roads should conform with Water Quality Management Practices on Forest Land (Michigan Department of Natural Resources 2006c).

**4.1.10 - Law Enforcement****4.1.10.1 – General Law Enforcement****Desired Future Condition:**

Enforcement of natural resource laws protect human health and safety, educate the public, and maintain the sustainability of Michigan's resources.

**Goals:**

1. An adequate force of Conservation Officers is trained and equipped to effectively enforce fish, game, and other environmental law and to provide hunting and recreational safety education programs throughout the state.

2. An adequate force of commissioned State Forest Officers is trained and equipped to provide additional law enforcement, public education and protection of natural resources upon the State Forest.

**Objectives:**

1. Enforce ORV certification requirements for riders (MCL 324.81129) statewide once ORV safety education classes are readily available.
2. Strengthen enforcement of ORV laws by increased patrols by conservation officers, Forest Service law enforcement, State Park officers and county sheriffs.
3. Provide ORV license dealers with a copies of ORV laws and safety information.
4. Review annual Forest Officer work plans with Law Enforcement Division work plans along with with other DNR Divisions and agencies.
5. Require that Forest Officers attend annual recertification and update sessions.
6. Ensure that Forest officers work cooperatively with local law enforcement agencies and DNR Law Enforcement Division Conservation Officers to provide additional support and to enhance the Forest Officer's education and enforcement skills.

**Standards:**

1. DNR Natural Resources Commission Policy and Procedure 35.41-01, Issuance of Law Enforcement Com missions to Department Employees other than Regular Conservation Officers, issued July 11, 2005.
2. DNR Natural Resources Commission Policy and Procedure 33.42-01, Enforcement of Forest Fire Laws, issued July 11, 2005.
3. DNR Natural Resources Commission Policy 2208, Off-Road Vehicle (ORV) Policy, issued June 9, 1994.

**Monitoring Criteria:**

Statewide Criterion 7 – Institutional Processes, Indicator 7.1

**4.1.10.2 - Contract Enforcement**

**Desired Future Condition:**

DNR contracts for ecological and socio-economic uses of the State Forest are legally constructed, competitively bid, promptly executed and expeditiously enforced.

**Goals:**

1. Administration of timber sale contracts, contracts for the maintenance of recreational trails, pathways and routes and other contracts is in accordance with DNR standards.

**Objectives:**

1. Employ multi-year, competitive bid options for ORV trail and route maintenance, including opportunities to allow for-profit entities to compete for trail maintenance contracts.
2. Prepare timber sale contracts (stumpage sales) in accordance with policy and procedure using the Timber Sale and the Vegetation Management System (VMS) programs.
3. Monitor and enforce timber sale preparation contracts are to ensure that the work meets the intent of the prescription, complies with safety requirements, and that the measurements meet the contract standards.

**Standards:**

1. DNR Forest Certification Work Instruction 7.1 – Timber Sale Preparation and Administration Procedures.
2. DNR Forest Certification Work Instruction 7.2 – Legal Compliance and Administration of Contracts.
3. Administrative Guide to State Government, Sections 500 and 600.
4. DNR Administrative Procedure 13.01 – Sections 1-19.

**Monitoring Criteria:**

Statewide Criterion 7 – Institutional Processes, Indicator 7.1

**4.1.10.3 - Trespass****Desired Future Condition:**

Incidents of trespass are minimized to reduce adverse impact upon the ecological and socio-economic values of the State Forest.

**Goals:**

1. Identify, document and resolve incidents of trespass upon State Forest lands through administrative remediation, compensation, or civil action in accordance with applicable procedures and statutes.
2. Law enforcement staff levels are adequate to effectively address trespass issues.
3. Improve methods of public education for land use rules.
4. DNR staff is aware of State Forest boundary locations.

**Objectives:**

1. Educate all DNR land management staff on dealing with trespasses and administering/enforcing State land use rules, policy and procedures and statutes.
2. Document and enter all trespasses into the Statewide Trespass Tracking System within 60 days of discovery, and to provide notification to trespassers within 90 days of discovery.

3. Within the constraints of fiscal resources, dedicate additional staff throughout the state to resolve pending trespass cases and other land use issues.
4. Cooperate with Law Enforcement Division and the Forest Officer program to increase law enforcement presence in addressing trespass cases.
5. Make publicly available in DNR offices copies of state land use rules, trespass procedures and applicable statutes.

**Standards:**

1. DNR Forest Certification Work Instruction 1.6 – Forest Management Unit Analyses
2. DNR Forest Certification Work Instruction 6.1 – Implementing Public Information and Education Opportunities on State Forests
3. DNR Forest Certification Work Instruction 7.2 – Legal Compliance and Administration of Contracts
4. DNR Policy/Procedure: Section 26 (various), 28-46.05, 32-22.07
5. NRC Policy: 2207, 2612, 2702, 5501
6. FMFM Policy: 211-215

**Monitoring Criteria:**

Statewide Criterion 7 – Institutional Processes, Indicator 7.1

**4.1.11 - Governmental and Stakeholder Relations**

**4.1.11.1 - Tribal**

**Desired Future Condition:**

The DNR seeks input from Native American Tribes in the management of the ecological and socio-economic values of the State Forest.

**Goals:**

1. Recognize Native American Tribes as sovereign governments with a unique status as key partners in the protection and sustainable management of the natural resources and heritage of the State.
2. Honor all 1836 and 1842 treaty obligations with Native American Tribes, within a government to government relationship, and adhere to the provisions of all court rulings pertaining thereto.
3. Expand systematic coordination, cooperation and information sharing with tribal governments in the management of State Forest Lands, utilizing a wide array of stakeholder, focus groups and citizen advisory committees.

**Objectives:**

1. Expand systematic coordination, cooperation and information sharing with Native American Nations by inviting the tribes to fully participate in all ecoregional and forest planning processes.
2. Consider tribal rights reserved by treaty, spiritual, cultural values and practices, archaeological and heritage resources, and adjacent reservation lands and trust lands in eco-regional management plans.

**Standards:**

1. DNR Forest Certification Work Instruction 9.1 – Collaboration with Tribes in regard to management of State Forest Lands.
2. All archeological, cultural, spiritual, and other sites of traditional interest related to Michigan tribes are considered confidential and proprietary information.

**Monitoring Criteria:**

Statewide Criterion 3 – Social/Cultural/Spiritual, Indicator 3.1

Statewide Criterion 7 – Institutional Processes, Indicator 7.2

**Guidelines:**

1. Notify and include Native American Tribes in eco-regional planning processes, invited to all FMU open houses and notified of all compartment reviews.

**4.1.11.2 – Federal and Local Government****Desired Future Condition:**

The DNR cooperates with Federal and local units of governmental organizations in the management of the ecological and socio-economic values of the State Forest.

**Goals:**

1. Expand systematic coordination, cooperation and information sharing with both Federal and local units of government in the management of State Forest Lands, utilizing a wide array of stakeholder, focus groups and citizen advisory committees.
2. Strive to strengthen and diversify local economies by supporting diversified forest uses and products. This should be accomplished efficiently and without compromising forest composition, structure, or ecological function.

**Objectives:**

1. Coordinate with Federal agencies and managers in the regional landscape on the conservation of High Conservation Value Areas.

2. Encourage compliance by local units of government with Part 811, Off-Road Recreational Vehicles, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (MCL 324.81131), which limits ORV use and designated ORV trail/route/area access along streets and highways under local jurisdiction to the requirements of the state comprehensive ORV system plan.
3. Seek increased ORV funding for county sheriff departments to acquire appropriate ORV enforcement patrol equipment and to provide additional patrol hours.

**Standards:**

1. DNR Natural Resources Commission Policy and Procedure 33.42-02, Extension of Federal Excess Property Program to Local Fire Departments, issued July 11, 2005.
2. DNR Natural Resources Commission Policy and Procedure Series 15 – Federal.
3. DNR Natural Resources Commission Policy and Procedure Series 20 – Grants Administration.
4. DNR Forest Certification Work Instruction 1.5 – Social Impact Considerations and Public Involvement Processes.
5. DNR Forest Certification Work Instruction 6.1 –Implementing Public Information and Educational Opportunities on State Forests.

**Monitoring Criteria:**

Statewide Criterion 7 – Institutional Processes, Indicator 7.2, 7.3

**Guidelines:**

1. Encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits, while taking into account environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.
2. Encourage multiple uses of forests and, where economically competitive, local processing of forest products, in line with efficient and ecologically-sound management and in collaboration with partners, forest policy and procedures.

**4.1.11.3 - Non-Governmental Organizations**

**Desired Future Condition:**

The DNR cooperates with non-governmental organizations and citizens groups in the management of the ecological and socio-economic values of the State Forest.

**Goals:**

1. Expand systematic coordination, cooperation and information sharing with non-governmental organizations in the management of State Forest Lands, utilizing a wide array of stakeholder, focus groups and citizen advisory committees.
2. Respond to public needs and concerns and capitalize on valuable public input to DNR initiatives. The effectiveness of the DNR's programs will be amplified by developing and maintaining professional relationships.

**Objectives:**

1. Coordinate with non-governmental forest owners in the regional landscape on the conservation of High Conservation Value Areas.
2. Seek additional cooperators as grant recipients for maintenance and capital improvements of motorized ORV and snowmobile trail systems.
3. Continue to seek cooperative agreements with conservancies and other similar organizations for the purpose of conserving forest lands and other natural resources having significant ecological or social-economic values.

**Standards:**

1. DNR Natural Resources Commission Policy and Procedure 17.01-03, DNR Employee's Involvement with Stakeholder and Public Working Groups, issued May 24, 2005.
2. DNR Natural Resources Commission Policy and Procedure Series 19 – Freedom of Information Act (FOIA).
3. DNR Natural Resources Commission Policy and Procedure Series 20 – Grants Administration.
4. DNR Forest Certification Work Instruction 1.5 – Social Impact Considerations and Public Involvement Processes.
5. DNR Forest Certification Work Instruction 6.1 –Implementing Public Information and Educational Opportunities on State Forests.

**Monitoring Criteria:**

Statewide Criterion 7 – Institutional Processes, Indicators 7.2, 7.3

**Guidelines:**

1. Seek a diversity of public participation to measure and assess the social impacts of forest management. Means of involvement range from routine FMU open houses, ongoing open compartment reviews through episodic and direct meetings by FMU staff with a wide array of stakeholders, focus groups and citizen advisory committees.
2. Where there is no conflict with operational management plans, encourage the conduct of basic scientific research on State Forest lands. Such research may be conducted by DNR research staff, or may be conducted in cooperation with public or private university staff and/or



- students, Federal government agencies, or other private or non-profit organizations.
3. In addition to maintaining and distributing appropriate written informational brochures and publications, use web pages to provide information and links to other information sources.

#### **4.1.12 – Research and Education**

##### **Desired Future Condition:**

The DNR works cooperatively with state universities and private organizations to fund research that will further develop knowledge and methods for sustainable management of the ecological and socio-economic values of the State Forest, and to promote public education and outreach opportunities regarding sustainable resource management.

##### **Goals:**

1. Support and help fund research projects in the forestry, wildlife and fisheries sciences that will further develop knowledge and methods for sustainable natural resource management.
2. Provide public educational programs and opportunities that help build public understanding and appreciation for the important processes linking landscapes, ecosystems, habitats, and biological assemblages, and the human values and services derived from these natural systems.
3. Develop education and outreach opportunities and materials that include a scientific understanding of collaborative and sustainable resource management issues, resulting in increased stewardship and conservation of the State's aquatic resources by future generations.

##### **Objectives:**

1. Encourage and fund innovative and cooperative research for experimental approaches to naturally regenerate hardwood tree species (such as oak, ash, and birch).
2. Prioritize research on Species of Greatest Conservation Need and their habitat relationships using the Wildlife Action Plan for guidance.
3. Use the Wildlife Division's Request for Research Proposal Process and Wildlife Research Priorities list to prioritize funding of research on wildlife species and their habitat relationships.
4. Develop informative materials (web or print based) related to sustainable resource management, diseases and invasive species management, and other topics of public interest.

##### **Standards:**

1. DNR Natural Resources Commission Policy and Procedure 17.54-06, Displays and Exhibits – Guidelines, issued July 11, 2005.
2. DNR Forest Certification Work Instruction 5.1 – Coordinated Natural Resource Management Research.

3. DNR Forest Certification Work Instruction 6.1 – Implementing Public Information and Educational Opportunities on State Forests.
4. DNR Wildlife Action Plan (Michigan Department of Natural Resources 2005c).
5. DNR Wildlife Division, Request for Research Proposal Process.

**Monitoring Criteria:**

Statewide Criterion 4 – Recreation, Indicator 4.3

Statewide Criterion 7 – Institutional Processes, Indicator 7.2

**4.1.13 – Department Administration**

**Desired Future Condition:**

The DNR has adequate administrative support to sustain the effectiveness of resource programs.

**Goals:**

1. Provide administrative support to the resource programs.

**Objectives:**

1. Plan, manage, and report the DNR's revenues, and expenditures to the general public and other governmental agencies as needed or requested.
2. Provide DNR-wide oversight related to planning, acquisition, maintenance, and reporting of DNR assets to the general public and other governmental agencies as needed or requested.
3. Hire qualified personnel who are representative of the work force.
4. Provide safe working conditions and appropriate training that facilitates employee productivity.
5. Ensure each employee understands their role in achieving the DNR's goals and objectives.
6. Develop and maintaining information services and systems that provide available information for required scientific management decisions and services.

**Standards:**

1. DNR Natural Resources Commission Policy and Procedure Series 01 – General Administration.
2. DNR Natural Resources Commission Policy and Procedure Series 02 – Revenue.
3. DNR Natural Resources Commission Policy and Procedure Series 03 – Accounting.
4. DNR Natural Resources Commission Policy and Procedure Series 04 – Inventory.
5. DNR Natural Resources Commission Policy and Procedure Series 05 – Travel.

6. DNR Natural Resources Commission Policy and Procedure Series 08 – Records Management.
7. DNR Natural Resources Commission Policy and Procedure Series 13 – Procurement.
8. DNR Natural Resources Commission Policy and Procedure Series 14 – DNR-Owned (or Personal) Vehicles, Motorized Equipment, and Aircraft.
9. DNR Natural Resources Commission Policy and Procedure Series 16 – DNR Facilities Management.
10. DNR Natural Resources Commission Policy and Procedure Series 17 – Communications.
11. DNR Natural Resources Commission Policy and Procedure Series 18 – Automated Systems Security.
12. DNR Natural Resources Commission Policy and Procedure Series 21 – Personnel Manual.
13. DNR Natural Resources Commission Policy and Procedure Series 25 – Legal Services.
14. DNR Forest Certification Work Instruction 7.2 – Legal Compliance and Administration of Contracts.

**Monitoring Criteria:**

Statewide Criterion 7 – Institutional Processes, Indicator 7.1

## **5 - SPECIAL RESOURCE AREA MANAGEMENT DIRECTION**

This section provides a description of areas of the State Forest that are designated as special resources areas. Special resource areas are comprised of three primary categories: Special Conservation Areas (SCAs), High Conservation Value Areas (HCVAs), and Ecological Reference Areas (ERAs).

SCAs are areas of the State Forest that have one or more identified special conservation objectives, interests or elements. They are a broad assemblage of areas that possess some inherent ecological, social or economic value, such as trout streams, archaeological sites or recreational areas.

HCVAs are areas of the State Forest that have been recognized for their contribution to specific conservation objectives or attributes through a formal process such as legislation, administrative rule, or Director's or Natural Resource Commission Orders. Designated HCVAs are located only upon State Forest lands, but within a landscape context it is important to coordinate conservation efforts of equivalent HCVA resources with other land owners throughout the landscape, including State Parks and wildlife areas, National Forests and Parks, and corporate and other private ownerships.

ERAs are areas that serve as models of ecological reference within the State. They are high quality examples of functioning ecosystems that are primarily influenced by natural ecological processes, and they may be located upon any land ownership in the State. High quality natural communities recognized by NatureServe and the Michigan Natural Features Inventory (MNFI) as Global (G) or State (S) endangered (1), threatened (2), or rare (3) and with an Element Occurrence (EO) rank of A or B in the MNFI database serve as an initial base set of ERAs.